MOTOROLA

SEMICONDUCTORS

P.O. BOX 20912 • PHOENIX, ARIZONA 85036

MHW4171
MHW4172

The RF Line

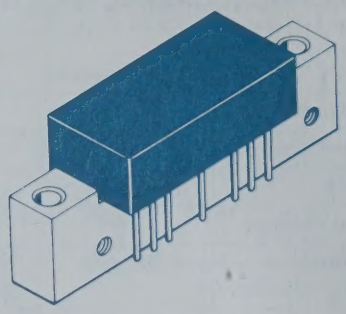
17 dB GAIN

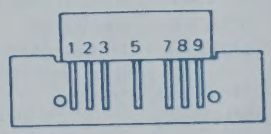
53-CHANNEL CATV INPUT/OUTPUT TRUNK AMPLIFIERS

400 MHz CATV AMPLIFIER MODULE

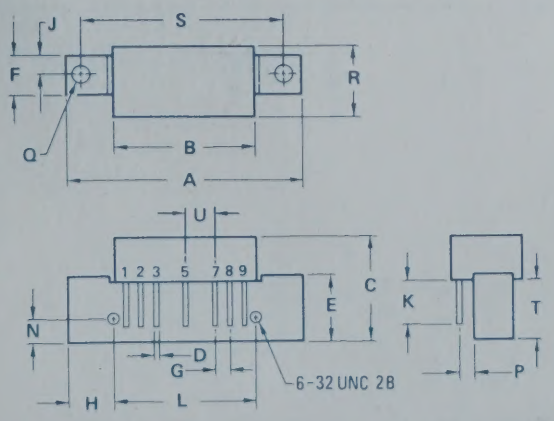
. . . designed specifically for 400 MHz/53-channel applications. Features all gold metallization system.

- Specified for 53-Channel Performance
- Broadband Power Gain — @ f = 40–400 MHz
  G_p = 17.0 dB (Typ)
- Broadband Noise Figure — @ f = 400 MHz
  NF = 6.5 dB (Typ) MHW4171
  7.5 dB (Typ) MHW4172
- Superior Gain, Return Loss and DC Current Stability with Temperature
- All Gold Metallization





PIN 1. RF INPUT
2, 3, 7, 8. DC AND RF GROUND
5. V_{DC}
9. RF OUTPUT



DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	–	45.08	–	1.775
B	26.42	26.92	1.040	1.060
C	20.57	21.34	0.810	0.840
D	0.46	0.56	0.018	0.022
E	11.81	12.95	0.465	0.510
F	7.87	8.13	0.310	0.320
G	2.41	2.67	0.095	0.105
H	9.65	9.78	0.380	0.385
J	3.96 BSC		0.156 BSC	
K	6.86	7.37	0.270	0.290
L	25.40 BSC		1.000 BSC	
N	4.06	4.32	0.160	0.170
P	2.16	2.92	0.085	0.115
Q	3.81	4.19	0.150	0.165
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S	38.10 BSC		1.500 BSC	
T	11.05	11.43	0.435	0.450
U	4.95	5.21	0.195	0.205

NOTE:
1. MOUNTING HOLES WITHIN 0.25 mm (0.010) DIA OF TRUE POSITION AT MAXIMUM MATERIAL CONDITION.

CASE 714-02

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DS5806
(Replaces ADI-574)
(Replaces ADI-574)

ABSOLUTE MAXIMUM RATINGS

Rating	Symbol	Value	Unit
RF Voltage Input	V_{in}	+70	dBmV
DC Supply Voltage	V_{CC}	+28	Vdc
Operating Case Temperature Range	T_C	-20 to +100	°C
Storage Temperature Range	T_{stg}	-60 to +100	°C

ELECTRICAL CHARACTERISTICS (V_{CC} = 24 Vdc, T_A = +25°C, 75 Ω system unless otherwise noted)

Characteristic	Symbol	MHW4171			MHW4172			Unit
		Min	Typ	Max	Min	Typ	Max	
Frequency Range	BW	40	—	400	40	—	400	MHz
Power Gain — 50 MHz	G_p	16.5	17.0	17.5	16.5	17.0	17.5	dB
Slope	S	+0.5	+1.2	+2.0	+0.5	+1.2	+2.0	dB
Gain Flatness	—	—	±0.1	±0.2	—	±0.1	±0.2	dB
Return Loss — Input/Output 40-300 MHz	IRL/ORL	18	—	—	18	—	—	dB
(Z_o = 75 Ohms) 300-400 MHz		16	—	—	16	—	—	
Second Order Intermodulation Distortion	IMD							dB
(V_{out} = +50 dBmV, Ch 2, 13, R)		—	-76	—	—	-78	—	
(V_{out} = +46 dBmV, Ch2, M6, M15)		—	-65	-60	—	-72	-65	
Cross Modulation Distortion								dB
(V_{out} = +50 dBmV) 35-Channel FLAT	XMD_{35}	—	-56	—	—	-60	—	
(V_{out} = +46 dBmV) 53-Channel FLAT	XMD_{53}	—	-59	-54	—	-62	-58	
Signal-to-Triple Beat Noise								dB
(V_{out} = +50 dBmV) 35-Channel FLAT	TB_{35}	—	-55	—	—	-59	—	
(V_{out} = +46 dBmV) 53-Channel FLAT	TB_{53}	—	-55	-51	—	-58	-55	
Noise Figure	NF							dB
(f = 300 MHz)		—	5.5	—	—	6.5	—	
(f = 400 MHz)		—	6.5	8.0	—	7.5	8.5	
DC Current	I_{DC}	—	160	190	—	200	230	mA
(V_{DC} = 24 ±0.5 Vdc, T_C = 30°C)								

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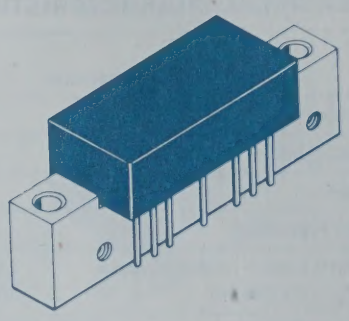

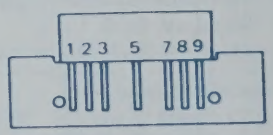

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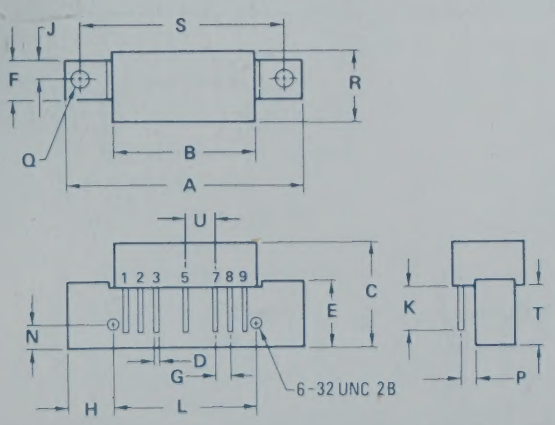

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DS5806
(Replaces ADI-574)

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Rating	Symbol	Value	Unit
RF Voltage Input	V_{in}	+70	dBmV
DC Supply Voltage	V_{CC}	+28	Vdc
Operating Case Temperature Range	T_C	-20 to +100	°C
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Characteristic	Symbol	MHW4171			MHW4172			Unit
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Frequency Range	BW	40	—	400	40	—	400	MHz
Power Gain — 50 MHz	G_p	16.5	17.0	17.5	16.5	17.0	17.5	dB
Slope	S	+0.5	+1.2	+2.0	+0.5	+1.2	+2.0	dB
Gain Flatness	—	—	—	±0.1	±0.2	—	±0.1	±0.2	dB
Return Loss — Input/Output (Z_o = 75 Ohms) 40–300 MHz	IRL/ORL	18	—	—	18	—	—	dB
Return Loss — Input/Output (Z_o = 75 Ohms) 300–400 MHz	IRL/ORL	16	—	—	16	—	—	dB
Second Order Intermodulation Distortion (V_{out} = +50 dBmV, Ch 2, 13, R)	IMD	—	-76	—	—	-78	—	dB
Second Order Intermodulation Distortion (V_{out} = +46 dBmV, Ch2, M6, M15)	IMD	—	-65	-60	—	-72	-65	dB
Cross Modulation Distortion (V_{out} = +50 dBmV) 35-Channel FLAT	XMD_{35}	—	-56	—	—	-60	—	dB
Cross Modulation Distortion (V_{out} = +46 dBmV) 53-Channel FLAT	XMD_{53}	—	-59	-54	—	-62	-58	dB
Signal-to-Triple Beat Noise (V_{out} = +50 dBmV) 35-Channel FLAT	TB_{35}	—	-55	—	—	-59	—	dB
Signal-to-Triple Beat Noise (V_{out} = +46 dBmV) 53-Channel FLAT	TB_{53}	—	-55	-51	—	-58	-55	dB
Noise Figure (f = 300 MHz)	NF	—	5.5	—	—	6.5	—	dB
Noise Figure (f = 400 MHz)	NF	—	6.5	8.0	—	7.5	8.5	dB
DC Current (V_{DC} = 24 ±0.5 Vdc, T_C = 30°C)	I_{DC}	—	160	190	—	200	230	mA

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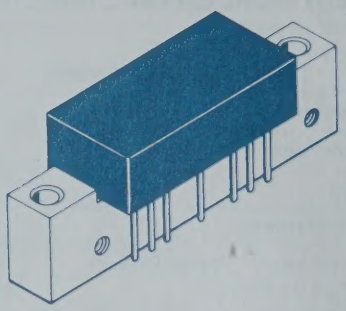

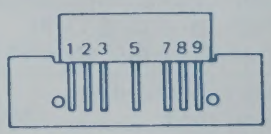

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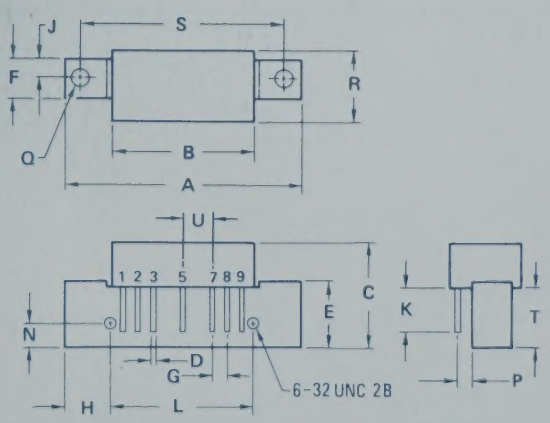

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DS5806
(Replaces ADI-574)

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Rating	Symbol	Value	Unit
RF Voltage Input	V_{in}	+70	dBmV
DC Supply Voltage	V_{CC}	+28	Vdc
Operating Case Temperature Range	T_C	-20 to +100	°C
Storage Temperature Range	T_{stg}	-60 to +100	°C

ELECTRICAL CHARACTERISTICS (V_{CC} = 24 Vdc, T_A = +25°C, 75 Ω system unless otherwise noted)

Characteristic		Symbol	MHW4171 Min	MHW4171 Typ	MHW4171 Max	MHW4172 Min	MHW4172 Typ	MHW4172 Max	Unit
Frequency Range		BW	40	—	400	40	—	400	MHz
Power Gain — 50 MHz		G_p	16.5	17.0	17.5	16.5	17.0	17.5	dB
Slope		S	+0.5	+1.2	+2.0	+0.5	+1.2	+2.0	dB
Gain Flatness		—	—	±0.1	±0.2	—	±0.1	±0.2	dB
Return Loss — Input/Output	40-300 MHz	IRL/ORL	18	—	—	18	—	—	dB
(Z_o = 75 Ohms)	300-400 MHz		16	—	—	16	—	—	
Second Order Intermodulation Distortion		IMD							dB
(V_{out} = +50 dBmV, Ch 2, 13, R)			—	-76	—	—	-78	—	
(V_{out} = +46 dBmV, Ch2, M6, M15)			—	-65	-60	—	-72	-65	
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(V_{out} = +50 dBmV)	35-Channel FLAT	XMD_{35}	—	-56	—	—	-60	—	
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Signal-to-Triple Beat Noise									dB
(V_{out} = +50 dBmV)	35-Channel FLAT	TB_{35}	—	-55	—	—	-59	—	
(V_{out} = +46 dBmV)	53-Channel FLAT	TB_{53}	—	-55	-51	—	-58	-55	
Noise Figure		NF							dB
(f = 300 MHz)			—	5.5	—	—	6.5	—	
(f = 400 MHz)			—	6.5	8.0	—	7.5	8.5	
DC Current		I_{DC}	—	160	190	—	200	230	mA
(V_{DC} = 24 ±0.5 Vdc, T_C = 30°C)									

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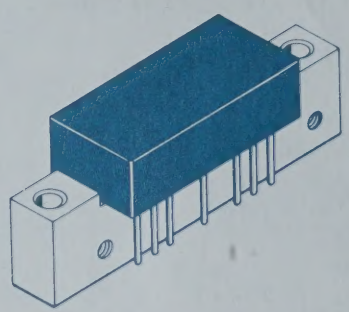

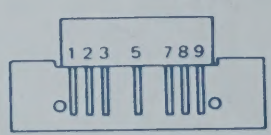

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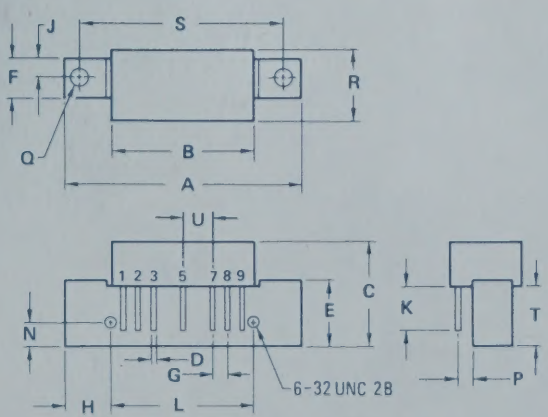

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Signal-to-Triple Beat Noise (V_{out} = +50 dBmV) 35-Channel FLAT (V_{out} = +46 dBmV) 53-Channel FLAT	 TB_{35} TB_{53}	 — —	 -55 -55	 — -51	 — —	 -59 -58	 — -55	dB
Noise Figure (f = 300 MHz) (f = 400 MHz)	NF	 — —	 5.5 6.5	 — 8.0	 — —	 6.5 7.5	 — 8.5	dB
DC Current (V_{DC} = 24 ±0.5 Vdc, T_C = 30°C)	I_{DC}	—	160	190	—	200	230	mA

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